

the original creek. The streamflow capacity of the Big Arkansas River was increased mainly by the pumping of sand from the bed of that stream, thus lowering the river bed, the pumping being done by private companies for the commercial value of the sand. While this was not a part of the flood-protection scheme, yet it was none the less effective. The river bed was lowered in places about 7 feet.

The flood of 1923 found the city prepared to the extent indicated, with the result that the main business section entirely escaped overflow, though the residence sections along the middle and upper course of the Little Arkansas River were extensively overflowed. The section in the Chisholm Creek drainage was overflowed as extensively as in 1904, but the straight-away lead and the larger carrying capacity of the drainage canal through that section caused the flood waters to recede quickly. The Big Arkansas River did not overflow within the city except in limited places in the extreme southern portion of the city.

The carrying capacity of the drainage canal at the time of the 1923 flood was 2,500 second-feet, though this was considerably restricted by the low arches of the bridges that spanned it. The estimated flow of the 1923 flood through that section was about 6,500 second-feet.

The carrying capacity of the Little Arkansas River at the time of the 1923 flood was 10,000 second-feet, but the estimated flow of that flood in the lower section of this stream was about 12,500 second-feet.

The carrying capacity of the Big Arkansas River, within the city of Wichita, was not reached in the 1923 flood, except in limited areas, as indicated, and the flow passing through it was estimated at 17,000 to 18,000 second-feet below its confluence with the Little Arkansas River.

The general slope of the land downstream in this section is about 5 feet to the mile.

The present plan of flood protection contemplates widening and deepening the drainage canal to a capacity flow of 8,000 second-feet, widening and diking the Little Arkansas River to a capacity flow of 12,500 second-feet throughout its entire course within the city, and widening certain obstructed sections of the Big Arkansas River, increasing its capacity to 20,000 second-feet, with a 3-foot freeboard for each stream as a further margin of safety. This work is now fairly under way, and it is expected that it will be completed early in 1926. The entire cost of this project will be about \$800,000.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, MARCH, 1925

By J. B. KINCER

General summary.—The mild, dry weather during much of March made conditions unusually favorable for farm operations in nearly all sections of the country, and both vegetation and farm work were considerably ahead of an average season. Two cool spells temporarily checked growth, especially the unseasonably low temperatures in the Southeast near the beginning of the month, and some local damage was done by frost. In general, however, the harm from low temperatures was not extensive and vegetation made good progress. Much plowing was accomplished in the interior valleys,

while spring planting advanced rapidly in the South, except in the dry Southwest where the moisture situation was largely unrelieved at the close of the month. Good rains were beneficial during the first half over the interior States and in southeastern districts showers were helpful during the latter part of the month.

Small grains.—Winter wheat and other fall-seeded grains made satisfactory progress in the principal producing areas, except in portions of the western and southwestern Winter Wheat Belt where it was too dry. Moisture was especially lacking in Texas, most of Oklahoma, and parts of Kansas and Nebraska. It was generally favorable for cereal crops in the Atlantic and east Gulf States and also in the far Northwest, but it was too dry in west Gulf districts.

Spring wheat seeding advanced rapidly the latter part of the month, under favorable weather conditions, and was completed in some southern sections of the belt. Oat seeding also advanced favorably, especially in the upper Mississippi Valley and northern Great Plains, with the early-seeded germinating well in the central valley States.

Corn and cotton.—Considerable corn ground was prepared in the interior valleys, with favorable soil condition, and at the close of the month planting had advanced northward to extreme southern Kansas, Tennessee, and North Carolina. Planting was retarded, however, in Texas and Oklahoma, and the soil was too dry in those States for proper germination. In the Southeast conditions were generally favorable for germination and corn had come up to a good stand.

The preparation for cotton planting made good progress, and seeding had become general in Gulf coast sections. Some cotton was planted as far north as southern North Carolina and the central portion of Arkansas. In Texas seeding made slow advance and conditions were unfavorable for growth of early cotton, except in the extreme South and the northeast.

Ranges, pastures, and livestock.—The weather was generally favorable for grazing interests in central and northern sections of the western grazing country, but it was mostly unfavorable in the South because of deficient moisture. Rainfall was sufficient during the latter part of the month to improve the range in eastern Oklahoma, parts of northern Texas, Arizona, and southern California, but elsewhere in the Southwest there was little relief from the drought and the range outlook was poor. In the eastern half of the country meadows and grass lands were in satisfactory condition generally.

Fruit.—Influenced by the persistent mild temperatures, early fruit continued to advance prematurely in the central portions of the country, though buds remained dormant in much of the upper Ohio Valley. There was some frost damage in parts of the South and the far West, but on the whole this was not extensive. Early fruits were setting well in Southern States, and reports on citrus were favorable. Strawberries were being marketed at the close of the month in the extreme lower Mississippi Valley, and shipments were active in northern Florida.

Miscellaneous crops.—Early gardens and truck crops were being planted in the Middle Atlantic and central valley States, while in the Southeast growth was generally favorable. Truck was thriving in California, but it was too dry in the west Gulf area.